

Marking Milestones at West Kowloon

Surveyors are playing a critical role in the development of the West Kowloon Cultural District, but must overcome a host of challenges to ensure the success of the proposed arts and cultural hub of Hong Kong.

Kit M Yip



The Xiqu Centre's 2,400 tonne steel main structure was successfully raised to its final position, 45 metres above street level, in May.

Photo: Courtesy of West Kowloon Cultural District Authority

"The Xiqu Centre's roof-raising process was closely monitored every second by numerous computers at various check points to ensure absolute accuracy."



Sr Dr Chan Man-wai
Executive Director, Project Delivery of the West Kowloon Cultural District Authority



Sr Adam Lee
Senior Director and Head of Land Advisory Services at Knight Frank



Sr Daniel Pong
Director of Union Contractors

While the operational parts of the much-anticipated West Kowloon Cultural District (WKCD) might currently consist of only a two-hectare section used for open concerts and bike riding, by completion it will boast an impressive 40 hectares of arts and entertainment space in whose planning and development surveyors are playing key role.

Sr Dr Chan Man-wai, Executive Director, Project Delivery, of the West Kowloon Cultural District Authority (WKCDA), says that the harbourfront international arts complex will gradually reveal its first-phase constructions over the next two years, with the Xiqu Centre performance venue, M+ Pavilion art hub and a sprawling park all operational by 2018.

Responsible for hardware development, Chan points out that the WKCD demonstrates the collaborative effort of planners, engineers, architects, surveyors and builders. "Collectively, we have to overcome many challenges," he says. "First, we aim for zero accidents. Second, it is very difficult to meet the tight budget that was set in 2008 due to the 136 per cent increase in construction costs since then. Third, the district is being built at the junction of four railway lines – the West Rail, Tung Chung, Airport Express and future Express Rail Link – and the Western Harbour Tunnel, which creates challenges ranging from land issues to noise mitigation. There are also complicated communications processes among the various stakeholders, as well as the constant need to report to Legco and district councils."

Despite the challenges, there is much good news. The Xiqu Centre, with its innovative design mixing old and new styles, recently passed a milestone in its construction with the successful raising in May of its 2,400-tonne steel main structure – representing three-fifths of the theatre – to its planned height of 45 metres above street level. According to

Carrie Lam, Chairman of the WKCDA Board, this significant milestone represents the beginning of the countdown to the Xiqu Centre's completion.

"This action alone had to be done three times spanning three months, with the roof first and the base last," Chan recalls. "Six sets of gigantic cables, each with a huge bundle of wires, were used. The process took an entire day each time, closely monitored every second by numerous computers at various check points to ensure absolute accuracy." This was preceded by the laying of foundations (started late 2013) and the building of superstructures (early 2015) as well as countless measurements and calculations to ensure precision.

Aiming to take Chinese opera to new heights with modern acoustics and design, the centre's design was inspired by Chinese theatrical tropes and folk bamboo theatres. The completed centre will feature a tea house where visitors can enjoy refreshments and listen to nanyin music.

"The 13,800 square metre centre will have a 1,100-seat main theatre at the top of the building, followed by learning and rehearsal centres and restaurants in the middle, and a spacious public atrium on the ground level. The theatre, which has no pillars so as to enable the best views of the stage, is at the top to ensure minimum loading," Chan says.

Even though the roof is now in position, surveyors continue to contribute to the Xiqu Centre's development. Built at the busy intersection of Canton Road and Austin Road, the theatre needs to be "a box within a box" to mitigate external noise and avoid structurally transmitted sound, Chan says. His team also has to work on specialised seating and stage design dedicated to the art form. Despite the difficulties, Chan is glad that the Xiqu community, who will be the end users, enthusiastically anticipate its opening.

COVER STORY

“Although BIM means higher cost during construction, it will facilitate maintenance and thus cost-saving in the long run, thus showing the forward-looking nature of the WKCD project.”

Sr Adam Lee, Senior Director and Head of Land Advisory Services at Knight Frank, and a sitting consultant of the WKCD, explains that there are huge complexities involved in the mega project. “WKCD plans to serve multiple purposes, including arts and culture, leisure, retail, dining, entertainment, hospitality, commercial, and residential use. This involves extremely complicated interfaces between the public and private sectors. For instance, the WKCD is tasked with preparing the WKCD development plan by ordinance, in which the arts and cultural facilities, as well as retail, dining and entertainment facilities, will belong to the WKCD; whereas the hotel, office and residential uses could be sold to private owners in future,” he says.

“We thus need to project into the future and, with a purpose-designed land grant, ensure the feasibility of such dynamic development on this large piece of land in the next two or three decades. We also need to safeguard the interests of the multiple stakeholders, including the WKCD, the government, future private owners and the general public.”

Obtaining land grants is one of the major areas where general practice surveyors make a difference, Lee says. He explains that they play an advisory role in relation to the planning, development and implementation for the WKCD, taking into account development controls from the perspectives of land administration, town planning and building ordinance. These encompass development planning, institutional structure, the evaluation of development potential, valuations, development packaging and programmes, and relevant land applications, among others. “When a building is completed, the role of general practice surveyors could even extend to cover sales, leasing and property or facilities management. In short, we find the biggest room for development within the development controls and legal framework,” he says.

Lee echoes Chan’s concerns on the added complexity of multiple parties’ land rights and physical limitations brought about by the site’s location at the junction of several major works. “Intersecting with the site are existing infrastructures – including railway facilities, the Western Harbour Tunnel, government pumping stations, private water

cooling mains, fire station and public roads – while the future Express Rail Link, under construction, has significant physical interface with the WKCD site,” he says.

“These lead to the need for interaction with various parties, including the MTR Corporation and KCR, Western Harbour Tunnel Company, Water Supplies Department, Government Property Agency, Fire Services Department, Highways Department and more. As general practice surveyors, we need to communicate with, and moderate, various stakeholders to resolve interface issues such as ‘what belongs to whom’ and ‘how interests of respective parties can be protected’. At the same time, we need to propose innovative solutions to facilitate the overall development of the district which, though self-financed in future, is a public mission after all.”

Sr Daniel Pong, Director of Union Contractors, is one of the people behind the development of the two-storey M+ Pavilion, which will be the site’s first major operational construction with events scheduled for this summer. Pong’s company is the main contractor and, having been awarded the project barely a year ago, is tasked with resolving difficult issues including completing the site formation, building underground drainage and manholes deep below sea level, and ensuring budget control.

Pong explains that building information modelling (BIM) is practised to record all information about equipment, structure and material with digital representations down to “every pillar and every brick”. “Although BIM means higher cost during construction, it will facilitate maintenance and thus cost-saving in the long run, thus showing the forward-looking nature of the WKCD project,” Pong says.

At the same time, however, Union Contractors needs to handle issues which cannot be resolved by BIM. “Before its opening, we hope to resolve issues caused by the gaps between the design concept and its implementation, such as, the “mirror” concept of external wall!” Pong says. “We look forward to the M+ Pavilion being well-received.”

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「戲曲中心的升頂過程每一秒鐘都有多台電腦在不同檢查點進行密切監控，以確保萬無一失。」

西九新里程

測量師對西九文化區發展發揮著至關重要的作用，他們必須克服重重挑戰，以確保香港擬建的文化藝術樞紐順利落成。

Kit M Yip



M+ 展亭的獲選設計，將於今年夏天開幕後成為 M+ 博物館舉辦展覽的主要場地。
(相片提供：彭耀輝建築師事務所 (VPANG)、JET 建築事務所、張勵繡)

西九文化區備受期待，雖然現時其營運部分佔地面積可能僅有兩公頃，用作舉辦露天音樂會及供市民騎單車運動，但西九文化區落成之日，其將提供佔地面積達 40 公頃的藝術和娛樂空間。對於西九文化區的規劃及發展，測量師發揮著重要作用。

西九文化區管理局項目推展行政總監陳文偉博士測量師表示，這座位處維港海旁的國際藝術綜合園區的首期建築工程將在未來兩年逐步落成，及至 2018 年，區內的戲曲中心表演場地、M+ 展亭藝術中心及一個佔地面積龐大的公園均將全部投入營運。

陳文偉負責園區硬件設施建設，他指出，西九文化區彰顯規劃師、工程師、建築師、測量師與建築商之間的精誠合作。「我們必須共同克服多重困難，」他說，「首先是零事故的目標；其次，自 2008 年制定預算以來，建築成本已增加 136%，預算緊張，資金壓力非常大。第三，西九文化區位於西鐵、東涌線、機場快線及未來高鐵線四線交匯處，還有西區海底隧道，為項目帶來了土地問題和減低噪音等一連串挑戰。此外，項目還需要與不同持份者進行細緻溝通，並需時常向立法會及區議會匯報。」

儘管項目困難重重，但依然不乏喜訊佳音。採用新舊風格混合創新設計的戲曲中心建設近日邁進新里程，於今年五月成功將 2,400 公噸的主體鋼結構（佔劇場大小五分之三）升頂，到達高出路面 45 米的規劃高度。西九文化區管理局董事局主席林鄭月娥女士稱，這一重大里程碑標誌戲曲中心進入落成倒數階段。

「單這項工程就需要進行三次，為期三個月，首先升高屋頂，最後是底座，」陳文偉回憶道。「工程使用了六組巨型纜索，每組纜索均配有大捆鋼線。每次作業都需要一整日，而且每一秒鐘都有多台電腦在不同檢查點進行密切監控，以確保萬無一失。」在此之前，還必須奠定地基（2013 年後期動土）及建設上蓋結構（2015 年初），以及進行大量測量及計算工作，以確保精確無誤。

「雖然 BIM 意味著施工期的成本增加，但長遠來看卻有助維修保養從而節省成本，因此彰顯西九文化區項目的前瞻性。」

戲曲中心的設計靈感源自中國戲台和民間戲棚，其採用現代聲學技術及設計，旨在將中國戲曲推向新的高度。落成後的戲曲中心以茶座為特色，遊客可在裡面一邊品茗，一邊欣賞南音音樂。

陳文偉稱：「中心佔地 13,800 平方米，位於建築頂部的主劇場設有 1,100 個座位；中部是教學、排練中心和餐廳；底部是寬敞的公共中庭。為了獲得最佳的舞台觀感，主劇場上並無任何立柱，而其位於建築頂部亦可確保建築負荷減至最低。」

儘管屋頂現時已吊升到位，測量師仍繼續參與戲曲中心的發展工作。據陳文偉介紹，戲曲中心位於廣東道與柯士甸道的繁忙交界處，中心需要成為「盒子中的盒子」才可減弱外界噪音和避免結構性回音。陳文偉的團隊亦必須專門就這種藝術形式研究特色座位和舞台設計。儘管困難多多，但戲曲中心的最終使用者——戲曲社團熱切期盼中心早日開幕，這讓陳文偉倍感欣慰。

李家豪測量師是萊坊高級董事及地產拓展部主管，也是西九文化區管理局常任顧問，他說明該龐大項目的錯綜複雜：「西九文化區計劃包含多種土地用途，如藝術與文化、康樂、零售、餐飲、娛樂、酒店、商業及住宅等用途，當中涉及公共和私人機構之間極複雜的相互影響。例如，西九文化區管理局的任務是根據有關條例制定西九文化區發展規劃，其中文化藝術設施以及零售、餐飲及娛樂設施將屬於西九文化區管理局所有，而酒店、寫字樓及住宅的使用則可在未來向私人業主出售。」

「有見及此，我們必須考慮未來，在獲得專用批地的情況下，確保未來二、三十年可在這幅大型土地上靈活發展。我們亦需保障不同持份者的利益，包括西九文化區管理局、政府、未來私人業主及公眾的利益。」

李家豪稱，獲取批地是產業測量師發揮作用的主要領域之一。他解釋道，測量師就西九文化區的規劃、發展及實施擔當顧問角色，他們會從土地管理、城市規劃及建築條例等角度考慮發展管制問題，包括發展規劃、組織架構、發展潛力評估、估值、發展組合及計劃，以及相關用地申請等。李家豪說：「建築物落成後，產業測量師的職責甚至還包括銷售、租賃及物業或設施管理方面的工作。簡而言之，我們要在發展管制及法律框架內尋求最大的發展空間。」

李家豪與陳文偉一樣，關注多方土地權利所增添的複雜性，以及園區位於多個大型工程交界所帶來的地理限制。他說：「該園區與多項現行基建相交匯，包括鐵路設施、西區海底隧道、政府抽水站、私人冷水管、消防局及公用道路，而興建中的高鐵對西九文化區更具有重要的實際影響。」

「因此我們有必要與港鐵公司、九廣鐵路、香港西區隧道有限公司、水務署、政府產業署、消防處、路政署等部門互相合作。作為產業測量師，我們需要與不同持份者溝通和協調，以解決『何物歸誰』及『如何保護各方利益』等相互影響的問題。與此同時，我們亦需要提出創新方案，以促進區內整體發展。雖然區內發展會於未來籌資，但這終歸是一項公共使命。」

華聯建築有限公司董事龐耀寶測量師是雙層 M+ 展亭的開發人之一。M+ 展亭將是園區內首個投入營運的主要建築，計劃在今個夏天推出活動。龐耀寶所在公司是總承建商，一年前才剛剛獲判該項目，負責解決各種難題，包括完成地盤平整工程、建設地下排水設施及海底沙井，以及確保預算控制。

龐耀寶解釋道，公司採用建築信息模擬 (BIM) 記錄所有與設備、結構及材料相關的信息，以數碼形式詳細記錄「一柱一磚」。他表示：「雖然 BIM 意味著施工期的成本增加，但長遠來看卻有助維修保養從而節省成本，因此彰顯西九文化區項目的前瞻性。」

但與此同時，華聯建築有限公司亦需要處理 BIM 無法解決的問題。「在開幕前，我們希望解決因設計理念與具體實施之間存在差異所引致的問題，例如：那『鏡』概念的外牆！」龐耀寶說道，「我們希望 M+ 展亭被大眾接受。」

本文由《Classified Post》撰文。